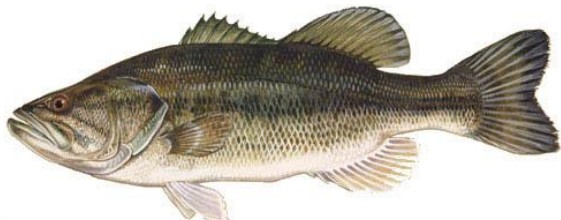


Black Bass Annual Review

From the Tidal Bass Manager
Joseph W. Love, Ph. D.



The past year of black bass research has been productive. A website was developed for communicating results from our tidal bass research to anglers. The website is located at: <http://www.dnr.state.md.us/fisheries/recreational/tidalbass/>. On this website, users will find periodic updates on the status of the black bass fishery, handling tips for keeping bass alive, and information on how we do the tidal bass survey. We have also updated our information for tournament directors and constructed a "frequently asked questions" page with answers to some tournament related questions. Over the next year, we will continue to research fishing mortality and spawning habits of black bass. For more information on our work or for questions, please contact myself (jlove@dnr.md.state.us; 410-260-8257), the southern regional manager, Mary Groves (mgroves@dnr.md.state.us), or the eastern regional manager, Rick Schaefer (rschaefer@dnr.md.state.us). Thanks and I look forward to hearing from you soon!

STATUS OF BLACK BASS POPULATIONS

Beginning in October 2009, five major rivers were surveyed using boat electrofishing to measure the status and health of black bass in the Chesapeake Bay watershed. These rivers were: Potomac River, rivers of the upper Chesapeake Bay, Choptank River, Marshyhope Creek (Nanticoke River), and Pocomoke River. We determined the proportion of legally catchable fish in our sample, the average catch (per unit effort) of bass for each population, total annual mortality for the population, individual growth rates, and individual fattiness or robustness.

About 1/3 of the population for the Potomac River, upper Chesapeake Bay, Pocomoke River, and Marshyhope Creek (Nanticoke River) is legally harvestable at 12". The percent of trophy size (≥ 15 ") largemouth bass was highest for the Choptank River (21%), but the number of fish caught was at least three times lower than other rivers surveyed. The second highest percentage of trophy size fish was noted for the upper Chesapeake Bay (14.6%), which also had the largest fish caught during the season (a fish weighing 8 lbs).

We caught the most fish in the Potomac River. We caught the second highest number of bass in the upper Chesapeake Bay (see Figure 1). Marshyhope Creek (Nanticoke River) and Pocomoke River had similar levels of catch, which was about half that observed for the upper Chesapeake Bay.

While it is not possible to accurately determine the current number of fish in these tidal rivers, it is clear that population sizes have not changed much for the Potomac River, Patuxent River, or upper Chesapeake Bay (see Figure 1). Most of the "ups and downs" in our catch estimates for the Potomac River and upper Chesapeake Bay is caused by differences in juvenile production between years.

There has been a noticeable decline in catch for the Choptank River and Chester River since

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2001. There are many possible reasons, including some extremely cold, wet and warm, dry years that can lower reproduction.

Total annual mortality levels were highest for Marshyhope Creek and the Choptank River. Annual mortality was reasonably normal for the Pocomoke River, upper Chesapeake Bay, and Potomac River.

Juvenile bass grow about 1 inch per month, which slows to about 0.2 inches per month after their first summer. When they reach 12 inches in size, growth slows to about 0.1 inches per month. It takes fish about 2 years to reach the 12 inch harvestable size for most systems, but slightly less time in the Pocomoke River and Marshyhope Creek. For these latter two systems, lower population sizes may allow slightly faster growth within the first year of life because of lower levels of competition for resources.

For all populations surveyed, fish were relatively fat and robust, with average relative weight values well above a national target of 95%.

Because of low catch levels and lower levels of observed reproduction, the Choptank River has received our lowest summary index value for the five rivers surveyed in 2009. We will be working to improve the conditions within the Choptank River over the next few years.

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Juvenile Production

During 2009, juvenile production was determined for five rivers targeted by the tidal bass survey and two additional rivers targeted by a juvenile bass survey*. These rivers were: Potomac River, Patuxent River*, upper Chesapeake Bay, Choptank River, Marshyhope Creek (Nanticoke River), Wicomico River*, and Pocomoke River.

Juveniles made up a larger proportion of the catch in the upper Chesapeake Bay and Potomac River (55% of the total sample for each). We also caught a high proportion in Marshyhope Creek (38% of the sample).

Catch a Fish with a Tag? Contact Joe Love (jlove@dnr.state.md.us; 410-260-8257) or Mary Groves (mgroves@dnr.state.md.us; 301-888-2423)

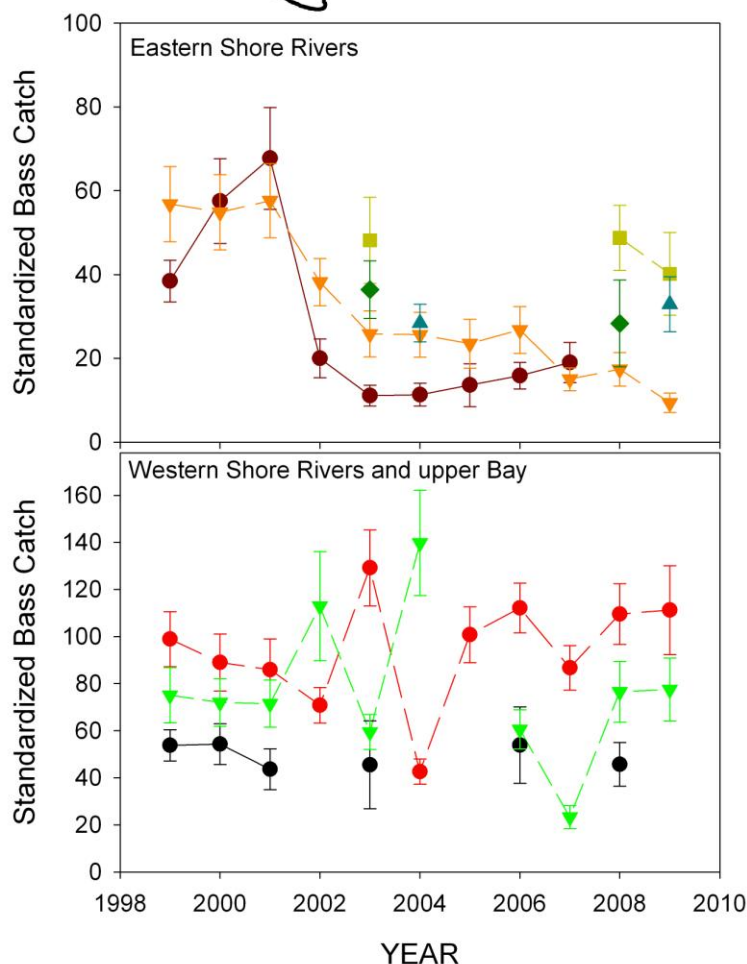
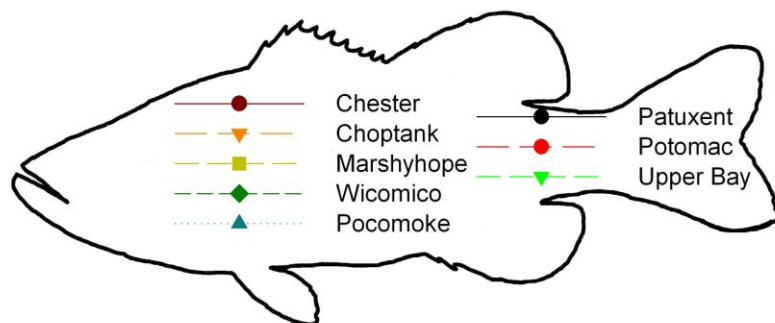
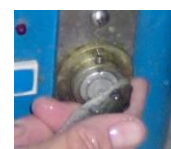


Figure 1. Standardized catch of largemouth bass (*Micropterus salmoides*) from targeted tidal rivers of the Chesapeake Bay watershed.

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The proportion of juveniles was low for the Choptank River, where juveniles made up only 7% of the sample.



The number of juveniles in the upper Chesapeake Bay was higher than in previous years (Figure 2), indicating good reproduction for both the Potomac river and upper Bay. The catch of juveniles was low in the Patuxent River, which is normal. Juvenile production was lowest

for the Pocomoke River, Wicomico River, and Choptank River. Getting good estimates of juvenile production for eastern shore rivers has been challenging since the 1980's. Current estimates may be lower than they really are.

In 2010, largemouth bass fingerlings will be stocked with priority to the Wicomico River and Pocomoke River, with some to the upper Chesapeake Bay. A large hatchery release of fish is scheduled for the Choptank River in 2011.

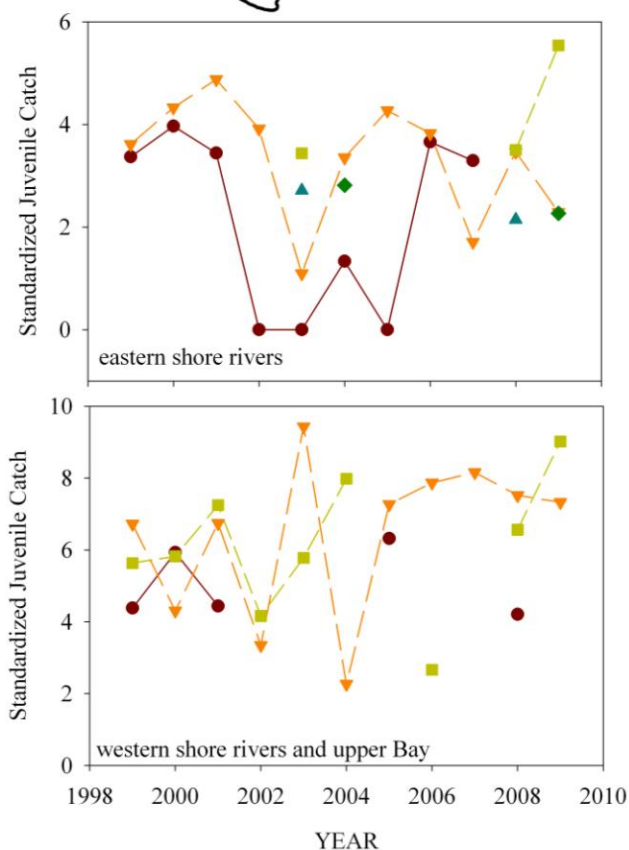
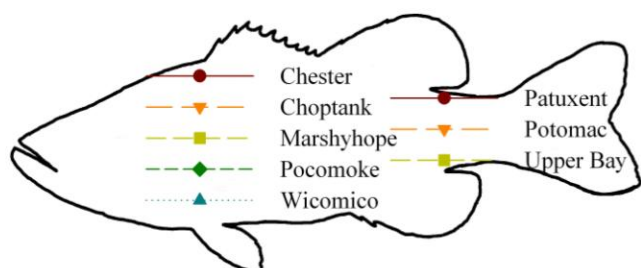


Figure 2. Standardized catch of juvenile largemouth bass (*Micropterus salmoides*) from targeted tidal rivers of the Chesapeake Bay watershed.

HATCHERY CONTRIBUTIONS



In 2009, over 100,000 fry and fingerlings were released in selected reaches of the Choptank River. Over 5,000 fingerlings were released to the Patuxent River and Middle River as well. These numbers add to a contribution of over 4 million largemouth bass to tidal rivers of Chesapeake Bay since 1980 by MDNR.

Most fish released to the rivers from our hatcheries were tagged. The success of recapturing a tagged fish directly depends on the number of tagged fish in the river, as well as the type of habitat to which fish are released. Recapture success has been high for the Western Branch of the Patuxent River because of its relatively small size and isolation.

Mortality and growth for hatchery-reared fish is normal and similar to that observed for wild-caught populations. One problem with hatchery contributions has been an algae that grows in hatchery ponds called water net (*Hydrodictyon*). This algae kills fingerlings when they are taken from the hatchery ponds. Their death limits the number of fingerlings we can release to tidal rivers. The hatchery manager, Brian Richardson, is currently researching ways to spawn largemouth bass and raise their offspring in tanks that can be more easily protected against water net.



For updates on our bass work, follow us on Twitter at twitter.com/MDDNRFISH

TOURNAMENT FISHING



Tournament angling for black bass can be an exciting event for anglers fishing the tournament or for folks watching the fish get weighed in. While it usually costs money to compete, watching the tournaments is a free and fun way to spend an afternoon. Most black bass tournaments held on tidal rivers of the Chesapeake Bay are held from March through September. In 2009, we recorded 137 tournaments during 2009 (March – November). More tournaments were recorded for the Potomac River (106) than elsewhere. There were 28 recorded tournaments for the upper Chesapeake Bay. During these tournaments, 7250 anglers fished and 19,275 fish were weighed-in. The catch (per unit effort) was higher for the Potomac River during this year and 2008 than in previous years.

Initial mortality levels have not changed significantly in the Potomac River since 2005 and averaged 2.7% (0 – 12.9% range). For the upper Chesapeake Bay, initial mortality was higher in 2009 than previous years, but at levels measured for the Potomac River (< 5%). Delayed mortality was estimated following 6 weekends of large tournaments (> 50 boats). Delayed mortality averaged 5.4% and ranged from 0 to 18.6%. The highest level of delayed mortality was observed following a weekend at the end of June when four tournaments were held.

During summer (June – September), initial mortality averaged 2.9% and delayed mortality averaged 6.5%. Total tournament fishing mortality was estimated at 9.4%. The sum of proportional annual harvest by recreational anglers and dead fish following tournaments was estimated as 0.11 fish/yr. Accordingly, total annual mortality due to tournament and non-tournament fishing accounts for approximately 1/4th of total mortality for populations in the Potomac River and upper Chesapeake Bay.

Are you a Tournament Director?

If you're a director, register your tournament and provide us your catch data. Download forms at: <http://www.dnr.state.md.us/fisheries/recreational/tidalbass/tournaments.html>.

TIDAL RIVER TOURNAMENT SERIES 2010 (REGISTERED OR REPORTED)

American Bass Anglers American Fishing Tour

18 April, Potomac River
1 May, Potomac River
12-13 June, upper Bay
27 June, Potomac River
17 July, Potomac River
24-25 July, Potomac River
7 Aug, Potomac River
8 Aug, Potomac River
14 Aug, Potomac River
21 – 22 Aug, Potomac River
11 – 12 Sept, Potomac River

Angler's Choice

6-7 March, Potomac River
13 March, upper Bay, Anchor Marina Inc.
27 March, Potomac
10-11 April, upper Bay, Anchor Marina Inc
24 April, Potomac River
8 May, upper Bay
15-16 May, Potomac River
12 June, upper Bay, Gunpowder River
18 June, upper Bay, Northeast River, Anchor Marina Inc.
19 June, Potomac River, Smallwood State Park
20 June, upper Bay, Northeast River, Anchor Marine
10 July, upper Bay
18 July, Potomac River
7 Aug, upper Bay
21 Aug, Potomac River
22 Aug, upper Bay
26 Sept, upper Bay

Bass Fishing League/FLW

1 May, Potomac River, Smallwood State Park
3-5 June, Potomac River, STREN Series, National Guard
College Series, Smallwood State Park
12 June, upper Bay, Anchor Marina Inc.
25-26 Sept, upper Bay, Elk Neck State Park

Chester County Bass Masters

11 April, upper Bay
9 May, Gunpowder River, Dundee Marina
13 June, upper Bay

Delaware BASS Federation Nation

17 April, Potomac River
23 May, Sassafrass River
20 June, Choptank River
11 July, Pocomoke River
22 Aug, Nanticoke River

Extreme Bass Anglers

3 April, Potomac River
26 June, Potomac River
18 Sept, Potomac River

Fishers of Men

17 April, Potomac River
15 May, upper Bay
14 Aug, Nanticoke River
25 Sept, Gunpowder River

Maryland BASS Federation Nation

10 April, Potomac River
15-16 May, Potomac River
17 July, Gunpowder River
14 August, Nanticoke River

Paralyzed Veterans of America

24 – 25 July, Potomac River

Pennsylvania BASS Federation Nation

18 April, East Potomac River
25 Sept, Susquehanna River

RECREATIONAL FISHING



Recreational anglers are the backbone to the tidal bass fishery in the Chesapeake Bay. A basic map of fishing sites has been developed and posted to the tidal bass website. Anglers can use this map to post their opinions of fishing on the rivers. Those comments are an easy way for recreational anglers to express their concerns over fisheries to each other and to the tidal bass manager.

The largest tidal bass are coming from the Potomac River and upper Chesapeake Bay. While our surveys usually aren't great at sampling old fish, we found several fish that were 15" or better and a couple that were over 5 lbs (Fig. 3). Most of the areas we hit in the Potomac River and upper Bay were grass habitats. In the upper Bay, several large bass were found in the Northeast River, especially near old piers and rip rap. The Choptank River yielded fewer bass, but a nice range in sizes. The largest fish we surveyed in the Choptank River was about 4 lbs.

A survey of angling activity on the Potomac River in 1994 indicated that largemouth bass was the major fishery, comprising about 56.7% of all fish caught. Harvest rate was higher in October than other months.

The recreational fishery in the upper Chesapeake Bay has increased significantly since one of the first creel surveys conducted in 1958, when channel catfish dominated anglers' catches. Commercial harvest of largemouth bass from 1947 to 1960 in the upper Chesapeake Bay possibly competed with recreational angling activity. Since at least the mid-1980's, catch rates by recreational anglers have steadily increased in the upper Bay. In 1997, a survey of recreational anglers from the upper Chesapeake Bay showed that black bass was the major recreational fishery. In 1997, the level of harvest by recreational anglers was estimated as 2% of that caught. Current levels of harvest, 13 years later, are not yet known.

License Fees Pay for our Tidal Bass Program.

SIZE RANGES OF BASS (2009)

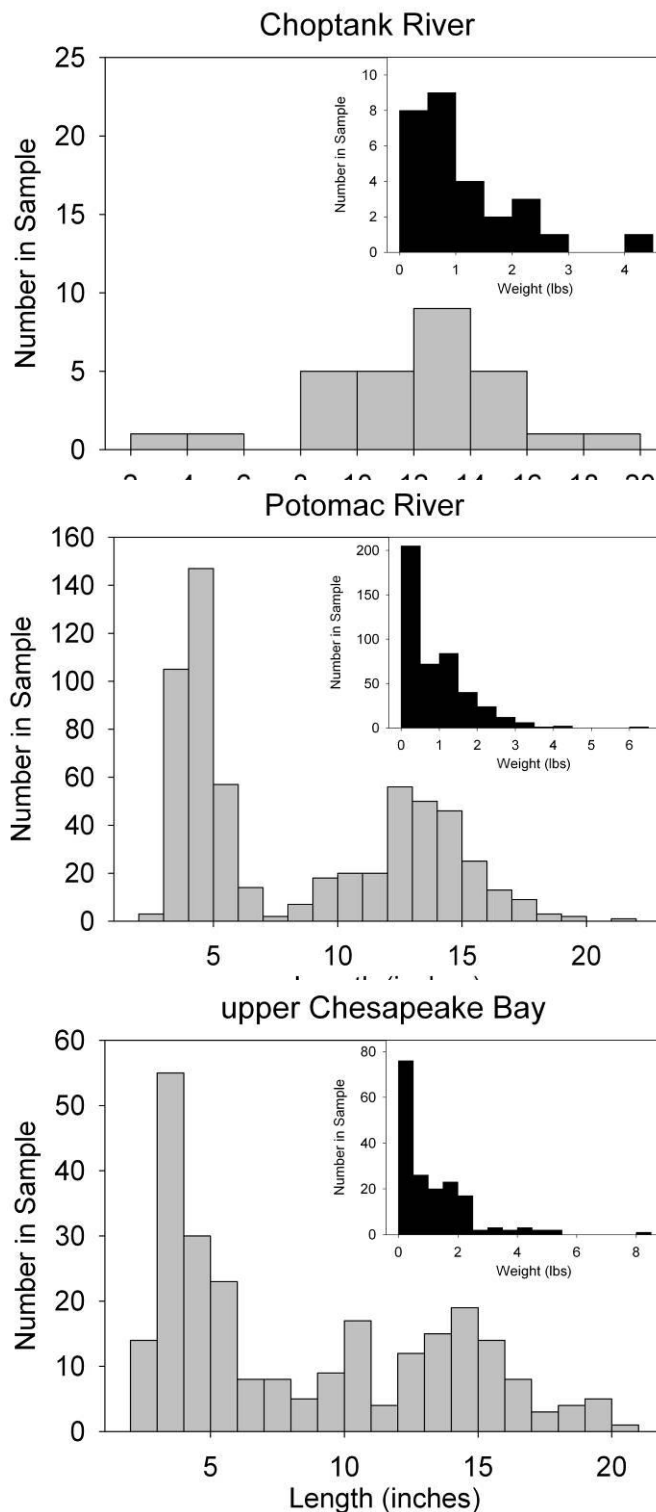


Figure 3. Number of largemouth bass (*Micropterus salmoides*) of different lengths and weights for populations surveyed in targeted rivers of the Chesapeake Bay watershed.

FISH HANDLING TIPS FOR BASS ANGLERS

Want to Keep Fish Alive?

Wipe down live wells and transport tanks thoroughly before using them

Organic material, such as mud or grass that remains in the live well can reduce dissolved oxygen in the live well. Bacteria that break-down the organic material use oxygen. As a result, it's more difficult to maintain dissolved oxygen levels. In addition, cleaning live wells also helps to prevent transmission of disease or bacterial infections. For these reasons, we also recommend immediate removal of dead fish from the live wells.

Use an effective culling strategy

Use non-invasive clips or mesh bags that do not wound the skin. Quickly weigh fish and release fish, if it is to be culled. Do not expose the fish to air for longer than a minute because important tissues of the fish can dry, possibly leading to suffocation and death. In our tidal waters, plastic clips may be preferred over metal ones because metal can rust. Clips are preferred over pins that puncture the skin. A cull bag can be used to either weigh the fish and/or separate fish in the live well.

Use a combination of ice and water exchanges to keep live well temperature within 5 – 7 ° F of the water temperature (2' below surface)

Use ice to lower water temperature as necessary, but do not overcool. Because the addition of more bass to tanks will warm water, you must regularly check temperature and adjust temperature with ice when necessary.

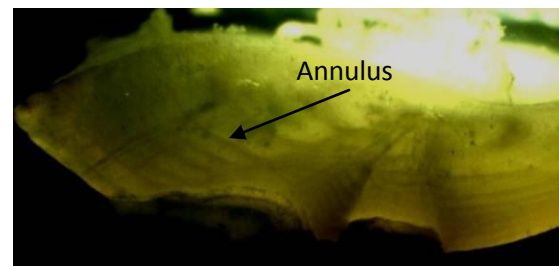
Use an aerator, continuous recirculation, half-water exchanges (every 3 hours), and compressed oxygen (if possible) to keep dissolved oxygen near 100% saturation

To keep good water quality in the live well, exchange tank water with good quality water, usually clear water in submerged vegetation areas or water with high flow or current (e.g., mid-channels). If your live well stops working, then try this: 1) Every 15 minutes, bucket 1/3 of water from the live well and replace it with fresh water from 3 feet deep; 2) Divide fish between live wells; and 3) If the fish dies, put the fish on ice and bring it home – **do not release dead fish to the environment.**

AGE MY BASS

How do you age a fish?

Fish can be aged using scales or other bony tissue. Sharks are usually aged using vertebrae and catfish can be aged using their spines. With largemouth bass, like most spiny rayed fishes, special types of bone generally called otoliths are used to age the fish. A lot of species have otoliths, including humans. Fish use otoliths to maintain their balance in the water column. There are three type of otolith bones and the sagittus is the most commonly used to age fish. The sagittus is usually the largest of the otoliths. If the fish has a large sagittus, then the otolith is usually sectioned or cut in half. By cutting it in half and polishing it, rings are exposed and can be counted. Each ring or annulus represents a time in the fish's life when growth is slower (such as winter). The number of rings represents the number of winters (or years) that the fish has lived.



What's the oldest bass out there?

The oldest fish we have aged so far was 12 years old. It was a female from the upper Chesapeake Bay that was 18.5 inches and 3.39 pounds. The state record bass is currently 22" and is probably about 15 years old. It's currently held on display at Bass Pro Shops in the Arundel Mills Mall (Hanover, MD). The oldest reported largemouth bass is 23 years old (38" and 22.2 lbs).

Is your fish...	Then it's probably this age...
Smaller than 8"?	less than a year old
Between 8 – 10"?	between 1 - 2 years old
Between 10 – 12"?	between 2 – 3 years old
Between 12 – 15"?	between 3 – 4 years old
Between 15 – 16 ½"?	between 4 – 5 years old
Over 16 ½" long?	Then it's almost middle aged!

IN THE WORKS

What Happens to Released Fish After Tournaments?

Many people have tried to answer the question of what happens to fish after they are released at a tournament. Less than 50% of them try to return to where they were captured. Whether they return or not depends on how far they were taken and where they are dropped off. Small populations in some of our tidal rivers can be wiped out if fish are being taken from the same area over and over again. Stocking can help prevent small populations from being wiped out.

For the second summer in a row, we will be taking a subsample of tournament caught fish and monitoring their survivorship in a net pen secured to a protected dock. Many people have noted that mortality is highest during summer. In the Potomac River, mortality is also higher during summer when water temperatures are high. We will determine if rates of mortality differ not only because of water quality, but also because of differences in handling stress. Our goal is to give better suggestions to tournament directors for lowering levels of delayed mortality.

Do Nest Boxes Work?

This project addresses the effectiveness of supplying artificial spawning habitat for tidal populations of largemouth bass. Artificial nest boxes have been constructed and used with modest levels of success for enhancing reproduction in tidal rivers of the Chesapeake Bay watershed. The proposed study will use laboratory and field experiments to evaluate the effectiveness of two types of nest boxes by: 1) determining if largemouth bass use nest boxes to spawn; 2) determining if the level of reproduction is greater when nest boxes are present; and 3) determining if the nest boxes can be effectively used in tidal rivers.

Nest boxes will be constructed based a design currently used by our hatcheries for providing spawning habitat to smallmouth bass (*M. dolomieu*). These nest boxes are square boxes lined with a layer of cobble.

Sanctuaries for Spawning Bass?

Sanctuaries have been established in two streams of the Potomac River since 2001. These areas are non-fishing zones from 1 March – 15 June and are restricted from power boat use. They were established in Nanjemoy River (area = 0.34 km²) and Chicamuxen Creek (0.11 km²) to help protect spawning habitat and spawning adults. We will conduct a two year project (Chicamuxen Creek in 2010 and Nanjemoy River in 2011) to determine if existing sanctuaries both: 1) meet the standards of spawning habitat; and 2) are used by adult largemouth bass during the spawning season. In 2010, the movement and habitat preferences of 20 adult largemouth bass (> 300 mm TL) will be tracked weekly in Chicamuxen Creek during the spawning season (March - June). Fish will be tracked using radiotransmitters, which are attached near the dorsal fin (Fig. 1). We will improve our ability to detect important spawning habitat for largemouth bass. Our goal is to effectively protect spawning habitat for largemouth bass, while minimizing potential negative impacts to tournament and non-tournament anglers.



Figure 1. Location of radiotag on largemouth bass. If caught, please return fish to water without removing the radiotag. Please contact Mary Groves at (301) 888-2423 or mgroves@dnr.state.md.us with date and location of catch. *Illustration by Mary Groves.*

All comments regarding this nontechnical document can be submitted to *Joe Love* at jlove@dnr.state.md.us. Data presented here are abbreviated from a more thorough and technical research report generated in 2009.